TREATABILITY PERFORMANCE REPORT
of the
GROUNDWATER TREATMENT SYSTEM
for the period December 20, 1994 to June 30, 1995

GRANVILLE SOLVENTS SITE
GRANVILLE, OHIO

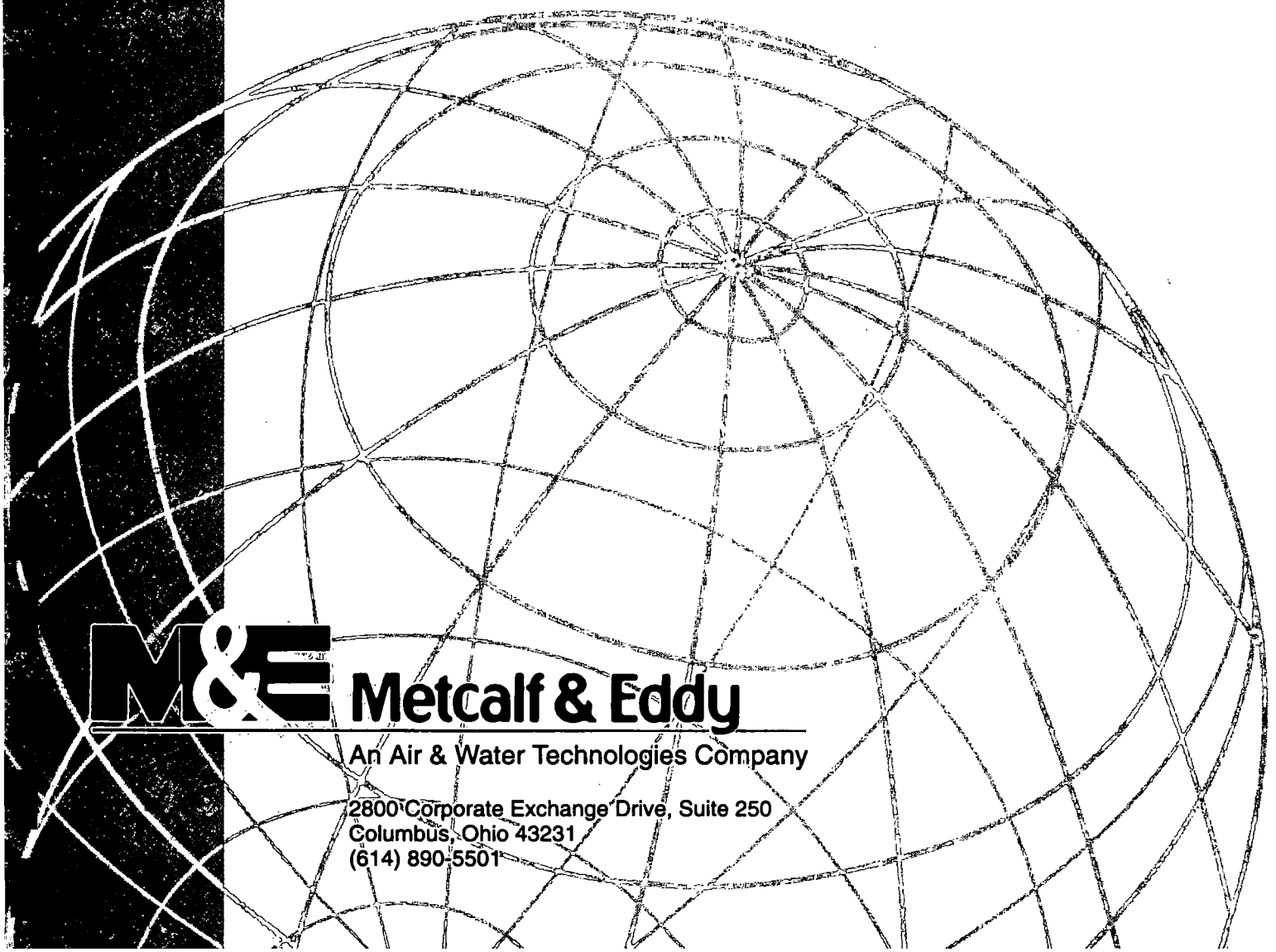
Submitted to:

The United States Environmental Protection Agency
Emergency Response Branch, Region V
Chicago, Illinois

Developed for:

Granville Solvents PRP Group
Columbus, Ohio

July 19, 1995



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An Air & Water Technologies Company

July 19, 1995

Mr. Edward J. Hanlon, Project Coordinator
U.S. Environmental Protection Agency, Region 5
Office of Superfund, Remedial & Enforcement Response Branch
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Subject: **Treatability Performance Report of the Groundwater Treatment System Granville Solvents Site Granville, Ohio**

Dear ~~Mr. Hanlon~~ Ed:

Please find enclosed two copies of the above referenced report for the Granville Solvents Groundwater Treatment System. If you have questions regarding this submittal, please contact Ben Pfefferle at (614) 469-3200 or me at (614) 890-5501.

Respectfully,

METCALF & EDDY, INC.

Jerry

Gerald R. Myers
Vice President/Project Coordinator

cc: B. Pfefferle, Chairman - Steering Committee
M. Raimonde, M&E
M. Anastasio, U.S. EPA
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TABLE OF CONTENTS

1.0 INTRODUCTION AND SUMMARY

The objective of this Treatability Performance Report is to present the performance results of the Groundwater Treatment System installed for the Response Action at the Granville Solvents Site in Granville, Ohio. Metcalf and Eddy, Inc. (M&E) has been contracted by the Granville Solvents Potentially Responsible Party (PRP) Group to design and implement the Response Action at the Site. This report addresses the use of the groundwater extraction and treatment system for the containment of the aquifer plume to satisfy the requirements of U.S. EPA Administrative Order on Consent.

The Groundwater Extraction and Treatment System consists of groundwater extraction wells and a shallow tray aerator for treatment of extracted groundwater. The system has operated and performed according to plan since December 20, 1994. As of June 30, 1995, the system has operated an average of approximately 94% of the time; it has treated approximately 61.3 million gallons of water; and it has achieved an average removal efficiency of 98.74%. The purity of treated water discharged to Raccoon Creek has been well below maximum contaminant levels (MCLs) for drinking water standards during all sampling events.

Section 2.0 provides descriptions of the Groundwater Extraction and Treatment system and its components and includes system capacities. The treatment system operation and performance is summarized in Section 3.0, while Section 4.0 summarizes the maintenance conducted on the treatment system.

2.0 SYSTEM DESCRIPTION

The Groundwater Extraction and Treatment System at the Granville Solvents Site consists of groundwater extraction wells, a shallow tray aerator and associated pumps, tanks, piping and controls. The extracted groundwater is treated in the shallow tray aerator to remove volatile organic compounds (VOCs).

The groundwater extraction system consists of two extraction wells, EW-1 and EW-2. Pumps in the extraction wells pump groundwater to an equalization tank located inside the treatment plant.

The treatment plant contains the main treatment system components. From the equalization tank, the water is pumped via a transfer pump to a bag filter system which removes sediments and fines from the water prior to it flowing into the shallow tray aerator. Water enters the shallow tray through a distribution manifold at the top of the aerator and flows down over the aerator trays in sequence. Treated water is discharged from the aerator sump by gravity through a pipe to an outfall at Raccoon Creek. Air is released from the aerator through a duct which discharges though the wall of the building.

2.1 EXTRACTION SYSTEM

The extraction system consists of two groundwater extraction wells equipped with submersible pumps. A 7.5 hp submersible pump designed to deliver a maximum of 250 gpm at 100 feet total dynamic head has been installed in extraction well EW-1. A 3 hp pump designed to deliver a maximum of 100 gpm at 80 feet of total dynamic head has been installed in extraction well EW-2.

2.2 EQUALIZATION TANK

Groundwater pumped from the extraction wells is discharged to a 2,500-gallon equalization tank located in the control building. The equalization tank equalizes any fluctuations in the flow rates from the wells and allows delivery of a consistent flow rate to the air stripper. The level of water in the tank is controlled by a programmable logic controller (PLC) and float switches. If the water level in the tank hits the high level alarm switch, the extraction pumps will be shut off by the PLC. The equalization tank has a cone bottom to allow easy removal of settled solids.

2.3 TRANSFER PUMP

A 15 hp pump transfers the water from the equalization tank through a bag filter system to the aerator. The pump will deliver approximately 450 gpm at 25 feet total dynamic head. The pump is controlled by the PLC based upon the level of water in the equalization tank.

2.4 BAG FILTERS

A bag filter system removes sediment and fines from the groundwater prior to discharge to the aerator. The bag filter housing holds three bags capable of filtering flow rates up to 600 gpm. The filter bags allow no particles larger than 250 microns to pass. A 25 psi pressure relief valve protects the bag filters from excess pressure build-up. If pressure exceeds 25 psi, the valve opens and transfers water back to the equalization tank.

2.5 SHALLOW TRAY AERATOR

A shallow tray aerator is used to remove VOCs from the groundwater prior to its discharge to Raccoon Creek. VOC removal from the groundwater is achieved by injecting the groundwater into the top of the shallow tray unit. The injected water flows over a series of trays to maximize the surface area of the water exposed to the counter-current air stream. Air is injected counter-current to the water flow by a blower to cause volatilization of the VOCs into the air stream. The violent mixing of air and water in the system also scours the wetted surfaces in the aerator, thereby helping to minimize scale deposits and reduce maintenance required for the system.

The aerator was sized using a computer modeling program. The system is designed to treat the maximum possible concentrations that were found at the site. The hydraulic capacity of the aerator is 350 gpm. Flow rates higher than 350 gpm will flood the trays and will not allow full aeration of the water stream.

The aerator sump is equipped with a high float switch which will signal the PLC to shut the system down if the aerator sump is flooded. This protects the blower from being damaged by water running to it through the air inlet pipe. A low pressure switch is also installed in the sump. If the pressure in the sump falls below the set point, the blower is either malfunctioning or something is blocking air flow. When this happens a signal is detected by the PLC and the PLC shuts down the system.

2.6 CONTROL SYSTEM

The Groundwater Extraction and Treatment System is completely controlled by an Allen Bradley SLC 503 PLC. The PLC controls all functions of operation of the system. In addition to the control functions described above, it is also equipped with several safety control features. For instance, there is a high level float switch installed in the sump located in the treatment building. If there is a leak in the system inside the building, this high float switch will be activated and the system will be shutdown until the problem is corrected.

The PLC is integrated with a Verbatim Autodialer which continuously monitors the system for alarms. If an alarm is detected, the Autodialer will call a series of phone numbers until the alarm is acknowledged. Also, the Autodialer can be called from any telephone to determine the status of the system.

3.0 TREATMENT SYSTEM OPERATION AND PERFORMANCE

The treatment system operation and performance is described by its run time, which is the time the system has run since start up; the groundwater flow rates treated by the system; and the concentrations reported for samples from the influent and effluent streams from the system. A discussion of each of these performance criteria is presented below.

3.1 RUN TIME

The system began operation on December 20, 1994. Only extraction well EW-1 was pumped during an initial pump test to analyze hydrogeologic properties of the aquifer. On January 3, 1995, pumping was begun for EW-2. Since the beginning of operation until the end of June, the system has operated 94.5% of the time (see Table 1). Most of the down time occurred during initial startup of the system and during acid washing of the system. During initial startup, down time was necessary to add system controls, adjust the control system, adjust flow meters, and solve electrical problems. It was necessary to acid wash the system in June to remove scale from wetted surfaces inside the aerator. This process is explained in more detail in Section 4.3. Other system down time was caused by maintenance performed on the system including: replacement of bags in the bag filters, adjustments to floats, cleaning float switches and flow meter sensors, and checking aerator trays.

3.2 FLOW RATES

Table 1 shows the flow rate from each extraction well and the total flow rate treated by the system. Figure 1 shows a graph of the same information, as well as graphs on influent and effluent concentrations. As indicated above, only extraction well EW-1 was pumped from December 20, 1994, to January 3, 1995. During this time period the pump operated at approximately 200 gpm. The pump in extraction well EW-2 was then started on January 3, 1995, at a flow rate of approximately 90 gpm. Therefore, the total flow rate treated by the system was 290 gpm (200 +90). Both pumps operated at these flow rates until February 10. On this date the pumping rate in extraction well EW-1 was reduced to 90 gpm to implement desired changes in aquifer gradients. This resulted in the total system flow being 180 gpm (90 +90). On May 3 the pumping rate in extraction well EW-1 was set at approximately 155 gpm which made the total system flow 245 gpm (155+90), since the pump in extraction well EW-2 remained at 90 gpm. The pumps were operating at these settings as of June 30, 1995.

The total quantity of groundwater extracted and treated by the system was approximately 61,319,000 gallons as of June 30, 1995. Approximately 37,888,600 gallons have been extracted from extraction well EW-1 and 23,430,400 gallons have been extracted from extraction well EW-2, as tabulated in Table 1.

3.3 INFLUENT AND EFFLUENT CONCENTRATIONS

Influent and effluent concentrations, removal efficiencies, and total VOCs removed by the treatment system also are shown in Table 1. Influent concentrations ranged from a minimum of 150 ug/l to a maximum of 259 ug/l. The flow weighted average influent concentration was 193 ug/l. The influent concentration was affected directly by the flow rate from EW-1. Higher influent concentrations were detected when the flow rate for EW-1 was low, while lower concentrations were detected when the flow rate from EW-1 was high. This was caused by dilution of less contaminated groundwater from EW-1 mixing with more contaminated water from EW-2. Concentrations changed as the pumping rate in EW-1 was varied while the pumping rate in EW-2 remained constant.

Effluent concentrations ranged from a minimum of non-detect to a maximum of 5.6 ug/l. The flow weighted average effluent concentration was 2 ug/l. The concentration of VOCs in the effluent remained well below the MCLs for drinking water standards during all sampling events. Effluent concentrations were tied closely with total flow rate. During times when the treatment system was treating the lowest flow rates, the lowest effluent concentrations were detected. This was caused by higher removal efficiencies achieved by the shallow tray aerator. Higher removal efficiencies were achieved because air-to-water ratios were higher at the lower water flow rates.

System removal efficiencies ranged from a minimum of 96.73% to a maximum of almost 100%. The flow weighted average was 98.74%. As described above, efficiency seems to correlate with total flow rate. Higher total flow rates usually resulted in reduced aerator removal efficiency. The total quantity of VOCs removed from the aquifer by the extraction system is approximately 99 lbs.

A summary of VOCs, semi-volatile organic compounds (SVOCs), and metals analytical data associated with the influent and effluent sampling is provided in Appendix A. Results of SVOC analyses indicated non-detect for all parameters for all sampling events except for bis(2-ethylhexyl)phthalate for which low concentrations were detected. Concentrations of Resource Conservation and Recovery Act (RCRA)

TABLE 1
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
RUN TIME, FLOW RATES, REMOVAL EFFICIENCY AND VOCS REMOVED

Time Period	System On (hours)	Total Available (hours)	Run Efficiency (%)	EW-1 (gal)	EW-2 (gal)	Total (gal)	Influent Total VOCs (ug/l)	Effluent Total VOCs (ug/l)	Removal Efficiency (%)	Total VOCs Removed (lbs)
Dec. 20, 1994 to Jan. 31, 1995	836	1032	81.0	12,158,057	4,478,400	16,636,457	158	3.33	97.89	21.9
February 1995	664	672	98.8	5,150,743	3,585,600	8,736,343	259	ND	100.00	18.9
March 1995	744	744	100.0	4,017,600	4,017,600	8,035,200	237	0.3	99.87	15.9
April 1995	693.65	720	96.3	3,745,710	3,745,710	7,491,420	240	ND	100.00	15.0
May 1995	735.83	744	98.9	6,565,503	3,973,482	10,538,985	150	3.4	97.73	13.2
June 1995	672.15	720	93.4	6,250,995	3,629,610	9,880,605	171	5.6	96.73	14.1
TOTALS/AVG.	4,346	4,632	93.8	37,888,608	23,430,402	61,319,010	193	2	98.74	99

Note: All averages are flow weighted.

ND - Non-Detect

metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) were either non-detect or below Contract Required Detection Limits (CRDL), but greater than the instrument detection level (IDL); an exception detection of lead in two samples. Lead was detected in the influent samples taken on January 3, 1995, and January 24, 1995. These results are believed to be laboratory analysis errors since the analysis on the effluent samples on the same days each indicated non-detect. In addition, all other lead concentrations were either non-detect or below the CRDL. Other metals analyses indicated concentrations consistent with concentrations found in local groundwater.

4.0 TREATMENT SYSTEM MAINTENANCE

The maintenance activities for the system have been divided into weekly, monthly, and quarterly tasks. A brief description of each is provided below.

4.1 WEEKLY MAINTENANCE

Weekly maintenance on the system consists of changing out bag filters, recording flow rates and system operation details, and inspection of the system components. Some minor maintenance is performed weekly on an as-needed basis. These minor maintenance items include: greasing the blower and transfer pump and maintaining the flow meters.

4.2 MONTHLY MAINTENANCE

Monthly maintenance consists of scheduled maintenance including: cleaning the flow sensors, the tank sump, the floats, the aerator sump and other miscellaneous system components. Also, the flow meters are checked and recalibrated if necessary.

4.3 QUARTERLY MAINTENANCE

Quarterly maintenance consists of scheduled acid cleaning of the system on a quarterly basis to remove iron, calcium, manganese, and magnesium scaling in system components. Since these minerals are dissolved at high concentrations in the groundwater, they tend to precipitate during the aeration process and form insoluble deposits of scale. If the scale is permitted to accumulate on the trays, removal efficiency can be adversely affected because air flow through the trays becomes constricted as scaling increases. Restricted air flow lowers the air-to-water ratio and thereby reduces removal efficiency.

During acid cleaning the aerator sump is used as a reservoir from which water is recirculated. The existing transfer pump is used to recirculate the water through the bag filter housing and through the aerator trays back to the aerator sump. Nitric acid (70%) is injected directly into the pipe at a rate of approximately 4.5 gph using a chemical feed pump. To protect system components, the pH is maintained above 1 S.U. by adjusting the chemical feed rate. Chemical addition is terminated once all scale on the aerator trays is dissolved. The acidic recirculation water is then transferred to a transfer tank where it

is neutralized with hydrated lime. The neutralized wastewater is then transferred to the City of Granville's publicly owned treatment works (POTW) for treatment and disposal.

APPENDIX A

ANALYTICAL DATA

METALS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N122094 (b)	F122094 (c)	I1395 (b)	E1395 (c)	N1-9-95 (b)	F1-9-95 (c)	F1-9-95 (c)	F1-17-95 (c)
Date Sampled	12/20/94	12/20/94	1/3/95	1/3/95	1/9/95	1/9/95	1/9/95	1/17/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1	EW-1	EW-1	EW-1	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2
Parameter								
Aluminum	200 U	200 U	12.1 B	13.3 B	11 U	11.1 U	11.1 U	11 U
Antimony	60 U	60 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U
Arsenic	10 U	10 U	2.5 U	2.6 B	2.5 U	2.5 U	2.5 U	2.5 U
Barium	200 U	200 U	104 B	105 B	112 B	112 B	113 B	114 B
Beryllium	5 U	5 U	0.07 U	0.1 B	0.07 U	0.07 U	0.07 U	0.07 U
Cadmium	5 U	5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Calcium	103000	102000	98400	98700	110000	110000	99100	101000
Chromium	10 U	10 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cobalt	50 U	50 U	0.9 U	0.9 U	0.89 U	0.9 U	0.9 U	0.89 U
Copper	25 U	25 U	20.3 B	0.83 B	0.79 U	0.8 U	0.8 U	0.79 U
Iron	1980	1980	1680	1410	1160	1410	832	951
Lead	3 U	3 U	49.1	1 U	1.2 B	1 U	1 U	0.99 U
Magnesium	32000	31000	31100	31200	34200	34100	31000	31700
Manganese	82	81	77.1	76.1	73.2	73.3	65.8	67.2
Mercury	0.2 U	0.2 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Nickel	40 U	40 U	7.9 B	1.3 B	1.2 U	1.2 U	1.2 U	1.2 U
Potassium	5000 U	5000 U	2690 B	2700 B	2900 B	2860 B	2700 B	2710 B
Selenium	5 U	5 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
Silver	10 U	10 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.69 U
Sodium	30000	27000	23400	23500	26100	25900	22800	23600
Thallium	10 U	10 U	3.7 B	3 U	3 U	3.1 B	3 U	3 U
Vanadium	50 U	50 U	0.9 U	0.9 U	0.89 U	0.9 U	0.9 U	0.89 U
Zinc	52	20 U	200	16.5 B	14.5 B	2.7 B	10.1 B	2.4 B

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

(b) – Samples were collected from the influent water to the stripper.

(c) – Samples were collected from the effluent water from the stripper.

U – Indicates that the parameter was not detected.

B – Indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the instrument detection limit (IDL)

METALS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N1-24-95 (b)	F1-24-95 (c)	N2-15-95 (b)	F2-15-95 (c)	N3-15-95 (b)	F3-15-95 (c)	N4-12-95 (b)	F4-12-95 (c)
Date Sampled	1/24/95	1/24/95	2/15/95	2/15/95	3/15/95	3/15/95	4/12/95	4/12/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2
Parameter								
Aluminum	11.1 U	11 U	18.7 B	15.2 B	11.1 U	20.4 B	25.8 B	28 B
Antimony	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.1 U	2.1 U
Arsenic	5.5 U	3.1 B	3.2 B	2.5 U	2.5 U	3.4 B	2.5 U	2.5 U
Barium	112 B	111 B	111 B	110 B	114 B	114 B	108 B	109 B
Beryllium	0.11 B	0.1 B	0.07 U	0.07 U	0.07 B	0.09 B	0.05 B	0.04 B
Cadmium	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Calcium	113000	113000	109000	107000	113000	112000	111000	111000
Chromium	0.5 U	0.5 U	0.61 B	0.5 U	0.5 U	0.5 U	0.8 U	0.79 U
Cobalt	0.9 U	0.89 U	0.9 U	0.9 U	0.9 U	0.9 U	1.1 U	1.1 U
Copper	0.8 U	0.8 U	4.4 B	0.8 U	0.8 U	0.8 U	1.1 U	1.1 U
Iron	1990	979	2370	1130	1120	1180	823	767
Lead	4.6	0.99 U	2.8 B	1 U	1 U	1 U	1.5 U	1.5 U
Magnesium	34400	34300	33800	33200	34500	34200	33500	33900
Manganese	65.6	65.4	76.6	68.9	67.7	67.5	63.9	64.4
Mercury	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.1 B	0.03 B	0.03 U
Nickel	2.3 B	1.2 U	2.8 B	1.3 B	1.2 U	1.2 U	2.9 B	1.6 U
Potassium	2640 B	2630 B	2730 B	2680 B	2650 B	2650 B	2570 B	2610 B
Selenium	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	3 U	3 U
Silver	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	1.2 U	1.2 U
Sodium	27700	28300	26000	25500	28300	28600	29100	29400
Thallium	3 U	3 U	3 U	3 U	3.2 B	4 B	4.7 U	4.7 U
Vanadium	0.9 U	0.89 U	0.9 U	0.9 U	0.9 U	0.9 U	1.1 U	1.1 U
Zinc	65.1	4.6 B	26	2 B	33.7	2.9 B	19.5 B	2 B

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

(b) – Samples were collected from the influent water to the stripper.

(c) – Samples were collected from the effluent water from the stripper.

U – Indicates that the parameter was not detected.

B – Indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the instrument detection limit (IDL)

METALS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N5-17-95 (b)	F5-17-95 (c)	N6-15-95 (b)	F6-15-95 (c)
Date Sampled	5/17/95	5/17/95	6/15/95	6/15/95
Units	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2
Parameter				
Aluminum	11.4 B	24.3 B	8.5 U	8.5 U
Antimony	2.1 U	2.1 U	2.1 U	2.1 U
Arsenic	2.5 U	2.5 U	2.7 B	2.5 U
Barium	107 B	106 B	98.7 B	98.4 B
Beryllium	0.04 U	0.1 B	0.08 B	0.09 B
Cadmium	0.2 U	0.2 U	0.2 U	0.2 U
Calcium	110000	110000	107000	107000
Chromium	0.8 U	0.79 U	0.8 U	0.8 U
Cobalt	1.1 U	1.1 U	1.1 U	1.1 U
Copper	1.1 U	1.1 U	1.4 B	1.1 U
Iron	1090	1050	1080	1060
Lead	1.5 U	1.5 U	1.5 U	1.5 U
Magnesium	33700	33700	32800	32800
Manganese	71	72.2	68	68.1
Mercury	0.03 B	0.03 B	0.03 U	0.03 U
Nickel	1.6 U	1.6 U	1.6 U	1.6 U
Potassium	2870 B	2770 B	2450 B	2450 B
Selenium	3 U	3 U	3 U	3 U
Silver	1.2 U	1.2 U	1.7 B	1.2 U
Sodium	28600	28600	28400	28500
Thallium	4.7 U	4.7 U	4.7 U	4.7 U
Vanadium	1.1 U	1.1 U	1.1 U	1.1 U
Zinc	18.3 B	2 B	39.6	1.6 U

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

(b) – Samples were collected from the influent water to the stripper.

(c) – Samples were collected from the effluent water from the stripper.

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VOLATILE ORGANICS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N122094 (b)	F122094 (c)	I1395 (b)	E1395 (c)	N1-9-95 (b)	F1-9-95 (c)	N1-17-95 (b)	F1-17-95 (c)
Date Sampled	12/20/94	12/20/94	1/3/95	1/3/95	1/9/95	1/9/95	1/17/95	1/17/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1	EW-1	EW-1	EW-1	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2
Parameter								
Acetone	4 J	23	5 U	5 U	25 U	5 U	25 U	5 U
Benzene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Bromodichloromethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Bromoform	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Bromomethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
2-Butanone	54	140	5 U	5 U	25 U	5 U	25 U	5 U
Carbon Disulfide	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Carbon Tetrachloride	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Chlorobenzene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Chloroethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Chloroform	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Chloromethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Dibromochloromethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
1,1-Dichloroethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
1,2-Dichloroethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
1,1-Dichloroethene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
cis-1,2-Dichloroethene	0.5 U	0.5 U	1 U	1 U	89	2	37	2
trans-1,2-Dichloroethene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
1,2-Dichloropropane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
cis-1,3-Dichloropropene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
trans-1,3-Dichloropropene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Ethylbenzene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	25 U	5 U	25 U	5 U
4-Methyl-2-Pentanone	0.5 U	0.5 U	5 U	5 U	25 U	5 U	25 U	5 U
Methylene Chloride	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Styrene	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
1,1,2,2-Tetrachloroethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Tetrachloroethene	0.5 U	0.5 U	1 U	1 U	79	1	66	0.9 J
Toluene	1	0.4 J	1 U	1 U	5 U	1 U	5 U	1 U
1,1,1-Trichloroethane	0.5 U	0.5 U	1 U	1 U	21	1 U	15	1 U
1,1,2-Trichloroethane	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
Trichloroethene	3	0.5 U	1 U	1 U	28	1 U	22	1 U
Vinyl Chloride	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
m & p Xylenes	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U
o-Xylenes	0.5 U	0.5 U	1 U	1 U	5 U	1 U	5 U	1 U

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

(b) – These samples were collected from the influent water to the stripper.

(c) – These samples were collected from the effluent water from the stripper.

U – This indicates that the parameter was not detected.

J – This indicates an estimated value.

VOLATILE ORGANICS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N1-24-95 (b)	F1-24-95 (c)	N2-15-95 (b)	F2-15-95 (c)	N3-15-95 (b)	F3-15-95 (c)	N4-12-95 (b)	F4-12-95 (c)
Date Sampled	1/24/95	1/24/95	2/15/95	2/15/95	3/15/95	3/15/95	4/12/95	4/12/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2
Parameter								
Acetone	1 J	5 U	33 U	5 U	12 U	5 U	33 U	5 U
Benzene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Bromodichloromethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Bromoform	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Bromomethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
2-Butanone	25 U	5 U	33 U	5 U	12 U	5 U	33 U	5 U
Carbon Disulfide	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Carbon Tetrachloride	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Chlorobenzene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Chloroethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Chloroform	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Chloromethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Dibromochloromethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
1,1-Dichloroethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
1,2-Dichloroethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
1,1-Dichloroethene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
cis-1,2-Dichloroethene	32	2	41	1 U	30	1 U	28	1 U
trans-1,2-Dichloroethene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
1,2-Dichloropropane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
cis-1,3-Dichloropropene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
trans-1,3-Dichloropropene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Ethylbenzene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
2-Hexanone	25 U	5 U	33 U	5 U	12 U	5 U	33 U	5 U
4-Methyl-2-Pentanone	25 U	5 U	33 U	5 U	12 U	5 U	33 U	5 U
Methylene Chloride	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Styrene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
1,1,2,2-Tetrachloroethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Tetrachloroethene	79	1	130	1 U	110	0.3 J	110	1 U
Toluene	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
1,1,1-Trichloroethane	23	0.3 J	95	1 U	38	1 U	40	1 U
1,1,2-Trichloroethane	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
Trichloroethene	32	0.8 J	53	1 U	59	1 U	62	1 U
Vinyl Chloride	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
m & p Xylenes	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U
o-Xylenes	5 U	1 U	7 U	1 U	2 U	1 U	7 U	1 U

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

(b) – These samples were collected from the influent water to the stripper.

(c) – These samples were collected from the effluent water from the stripper.

U – This indicates that the parameter was not detected.

J – This indicates an estimated value.

VOLATILE ORGANICS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N5-17-95 (b)	F5-17-95 (c)	N6-15-95 (b)	F6-15-95 (c)
Date Sampled	5/17/95	5/17/95	6/15/95	6/15/95
Units	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2	EW-1 & EW-2
Parameter				
Acetone	12 U	5 U	17 U	5 U
Benzene	1.2 U	0.5 U	3 U	1 U
Bromodichloromethane	1.2 U	0.5 U	3 U	1 U
Bromoform	1.2 U	0.5 U	3 U	1 U
Bromomethane	1.2 U	0.5 U	3 U	1 U
2-Butanone	12 U	5 U	17 U	5 U
Carbon Disulfide	1.2 U	0.5 U	3 U	1 U
Carbon Tetrachloride	1.2 U	0.5 U	3 U	1 U
Chlorobenzene	1.2 U	0.5 U	3 U	1 U
Chloroethane	1.2 U	0.5 U	3 U	1 U
Chloroform	1.2 U	0.5 U	3 U	1 U
Chloromethane	1.2 U	0.5 U	3 U	1 U
Dibromochloromethane	1.2 U	0.5 U	3 U	1 U
1,1-Dichloroethane	1.2 U	0.5 U	3 U	1 U
1,2-Dichloroethane	1.2 U	0.5 U	3 U	1 U
1,1-Dichloroethene	1.2 U	0.5 U	3 U	1 U
cis-1,2-Dichloroethene	15	1	15	2
trans-1,2-Dichloroethene	1.2 U	0.5 U	3 U	1 U
1,2-Dichloropropane	1.2 U	0.5 U	3 U	1 U
cis-1,3-Dichloropropene	1.2 U	0.5 U	3 U	1 U
trans-1,3-Dichloropropene	1.2 U	0.5 U	3 U	1 U
Ethylbenzene	1.2 U	0.5 U	3 U	1 U
2-Hexanone	12 U	5 U	17 U	5 U
4-Methyl-2-Pentanone	12 U	5 U	17 U	5 U
Methylene Chloride	1.2 U	0.5 U	3 U	1 U
Styrene	1.2 U	0.5 U	3 U	1 U
1,1,2,2-Tetrachloroethane	1.2 U	0.5 U	3 U	1 U
Tetrachloroethene	66	1	75	1
Toluene	1.2 U	0.5 U	3 U	1 U
1,1,1-Trichloroethane	28	0.4 J	33	0.6 J
1,1,2-Trichloroethane	1.2 U	0.5 U	3 U	1 U
Trichloroethene	41	1 J	48	2
Vinyl Chloride	1.2 U	0.5 U	3 U	1 U
m & p Xylenes	1.2 U	0.5 U	3 U	1 U
o-Xylenes	1.2 U	0.5 U	3 U	1 U

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

(b) – These samples were collected from the influent water to the stripper.

(c) – These samples were collected from the effluent water from the stripper.

U – This indicates that the parameter was not detected.

J – This indicates an estimated value.

SEMIVOLATILE ORGANICS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N122094 (b)	F122094 (c)	I1395 (b)	E1395 (c)	N1-9-95 (b)	F1-9-95 (c)	N1-17-95 (b)	F1-17-95 (c)	N1-24-95 (b)	F1-24-95 (c)
Date Sampled	12/20/94	12/20/94	1/3/95	1/3/95	1/9/95	1/9/95	1/16/95	1/16/95	1/24/95	1/24/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1	EW-1	EW-1	EW-1	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2
Parameter										
Acenaphthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroisopropyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-nitrosodiphenylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-nitrosodipropylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)phthalate	2 JB	3 JB	2 JB	4 JB	2 J	4 JB	8 J	9 J	4 JB	2 JB
Benzyl butyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dimethyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-C,D)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzyl Alcohol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
3-Nitroaniline	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
4-Nitroaniline	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
p-Chloro-m-cresol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

SEMIVOLATILE ORGANICS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N122094 (b)	F122094 (c)	I1395 (b)	E1395 (c)	N1-9-95 (b)	F1-9-95 (c)	N1-17-95 (b)	F1-17-95 (c)	N1-24-95 (b)	F1-24-95 (c)
Date Sampled	12/20/94	12/20/94	1/3/95	1/3/95	1/9/95	1/9/95	1/16/95	1/16/95	1/24/95	1/24/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1	EW-1	EW-1	EW-1	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
2,4-Dinitrophenol	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
4,6-Dinitro-2-methylphenol	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
Pentachlorophenol	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzoic Acid	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50 U	50 U	26 U	26 U	25 U	25 U	25 U	25 U	26 U	26 U

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

(b) – These samples were collected from the influent water to the stripper.

(c) – These samples were collected from the effluent water from the stripper.

U – This indicates that the parameter was not detected.

J – This indicates an estimated value.

B – This indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the instrument detection limit.

SEMIVOLATILE ORGANICS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N2-15-95 (b)	F2-15-95 (c)	N3-15-95 (b)	F3-15-95 (c)	N4-12-95 (b)	F4-12-95 (c)	N5-17-95 (b)	F5-17-95 (c)	N6-15-95 (b)	F6-15-95 (c)
Date Sampled	2/15/95	2/15/95	3/15/95	3/15/95	4/12/95	4/12/95	5/17/95	5/17/95	6/15/95	6/15/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2
Parameter										
Acenaphthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
bis(2-chloroethyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
4-Chlorophenyl phenyl ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
4-Bromophenyl phenyl ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
bis(2-chloroisopropyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
bis(2-chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Naphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
N-nitrosodiphenylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
N-nitrosodipropylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
bis(2-ethylhexyl)phthalate	2 JB	2 JB	46 B	18 B	2 JB	1 JB	6 JB	3 JB	19 B	11 B
Benzyl butyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Di-n-butyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Di-n-octyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Diethyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Dimethyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Fluorene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Indeno(1,2,3-C,D)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Benzyl Alcohol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Dibenzofuran	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2-Methylnaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2-Nitroaniline	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
3-Nitroaniline	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
4-Nitroaniline	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
p-Chloro-m-cresol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U

SEMIVOLATILE ORGANICS DETECTED IN THE INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number	N2-15-95 (b)	F2-15-95 (c)	N3-15-95 (b)	F3-15-95 (c)	N4-12-95 (b)	F4-12-95 (c)	N5-17-95 (b)	F5-17-95 (c)	N6-15-95 (b)	F6-15-95 (c)
Date Sampled	2/15/95	2/15/95	3/15/95	3/15/95	4/12/95	4/12/95	5/17/95	5/17/95	6/15/95	6/15/95
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pumping Well (a)	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2	EW-1&EW-2
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
4-Nitrophenol	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
2,4-Dinitrophenol	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
4,6-Dinitro-2-methylphenol	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
Pentachlorophenol	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzoic Acid	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
4-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
2,4,5-Trichlorophenol	26 U	26 U	26 U	26 U	25 U	26 U	50 U	50 U	25 U	27 U

Key:

(a) – The pumping well refers to the extraction wells which are providing water to the air stripper.

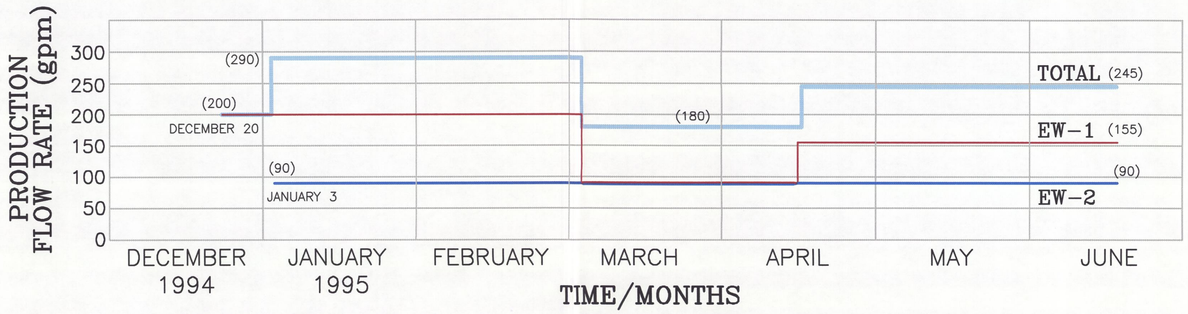
(b) – These samples were collected from the influent water to the stripper.

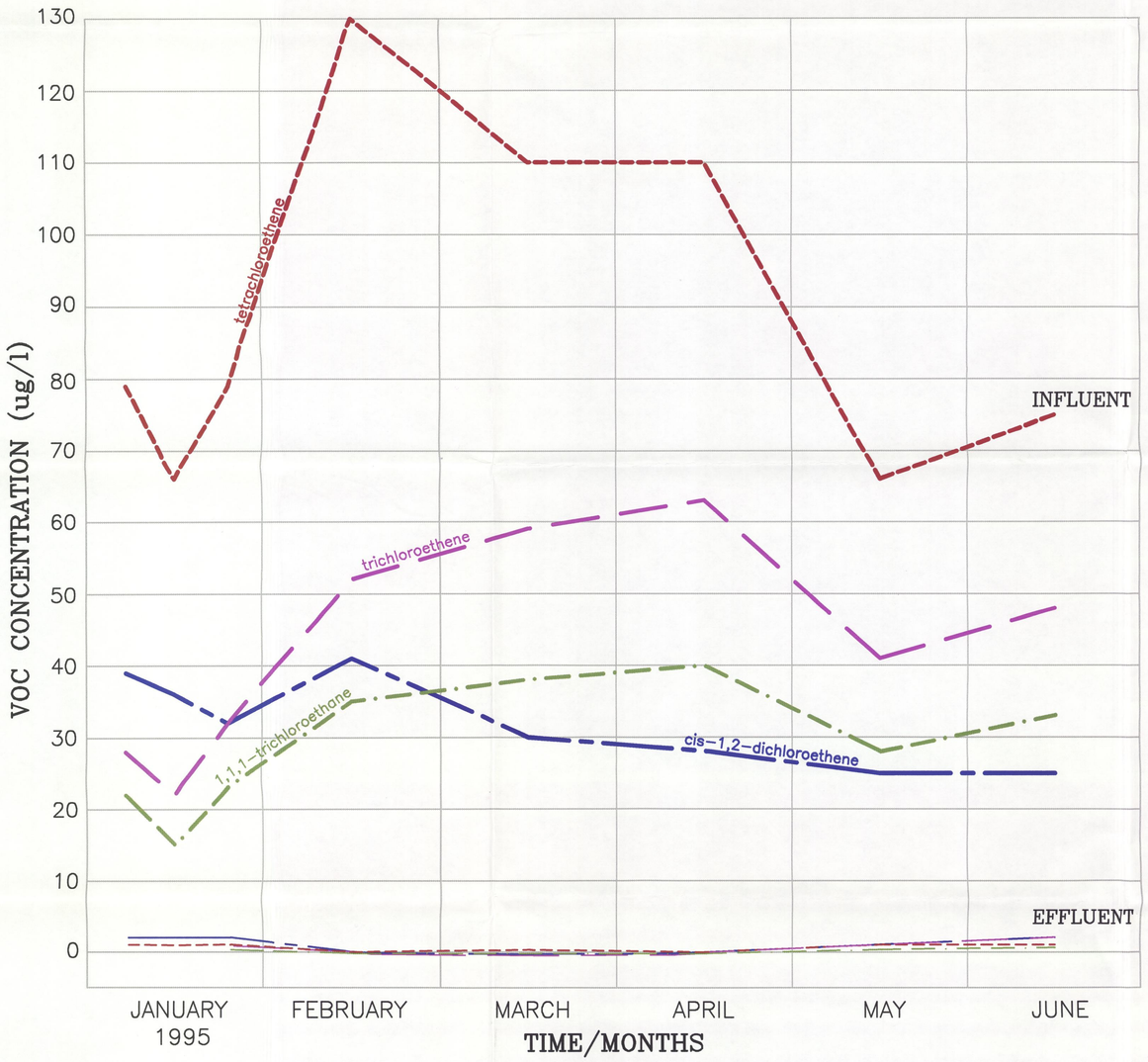
(c) – These samples were collected from the effluent water from the stripper.

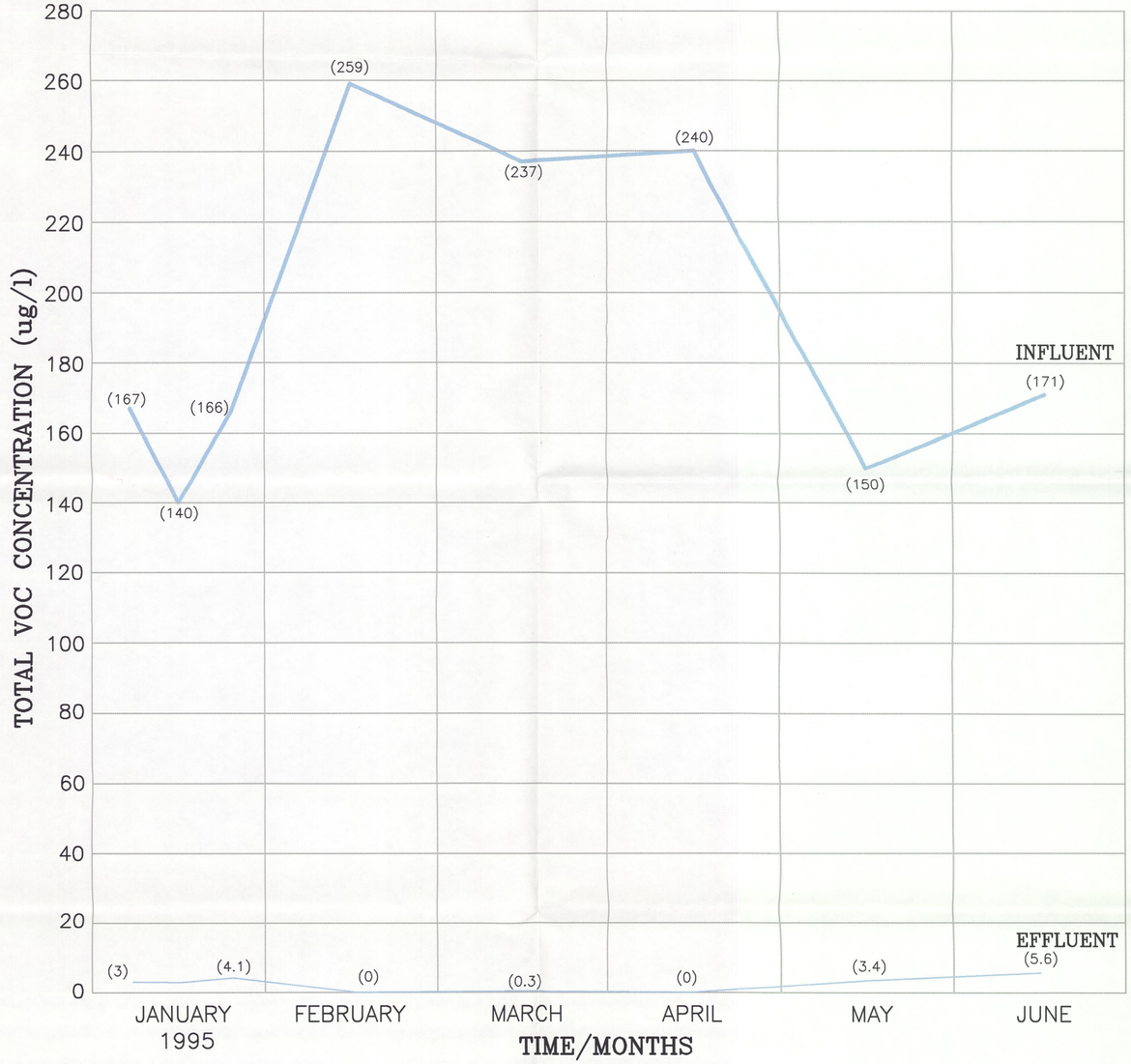
U – This indicates that the parameter was not detected.

J – This indicates an estimated value.

B – This indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the instrument detection limit.







EFFLUENT 1,1,1-trichloroethane
INFLUENT 1,1,1-trichloroethane
EFFLUENT cis-1,2-dichloroethene
INFLUENT cis-1,2-dichloroethene
EFFLUENT tetrachloroethene
INFLUENT tetrachloroethene
EFFLUENT trichloroethene
INFLUENT trichloroethene
EFFLUENT TOTAL
INFLUENT TOTAL

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

REVISIONS

DRAWN BY CAP/TPF

DEPT. CHECK

PROJ. CHECK

Metcalf & Eddy

REG. PROF. ENGR. _____ DATE _____

PLOT DATE: 7-18-95

GRANVILLE SOLVENTS SITE

SYSTEM PERFORMANCE
DECEMBER 1994 THROUGH JUNE 1995
GRANVILLE, OHIO

JOB 016688-0001-013

FILE NO. GRNV010A

FIGURE 1